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**IMMIGRANTS IN THE U.S. NAVY: PRESENT, PAST
AND FUTURE**

by

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March 2017

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IMMIGRANTS IN THE U.S. NAVY: PRESENT, PAST AND FUTURE

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Submitted in partial fulfillment of the
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from the

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ABSTRACT

The research compares first-term enlisted Navy attrition rates of people with different immigration/citizenship statuses. More specifically, this study identifies four groups: (1) noncitizens; (2) persons who migrate to the United States from a U.S. territory and thus possess statutory (not constitutional) citizenship; (3) U.S. citizens born in the territories (Puerto Rico, the Northern Marianas Islands, the Federated States of Micronesia, Guam, the U.S. Virgin Islands, American Samoa, and the Republic of the Marshall Islands); and (4) U.S. citizens born in the mainland. The Navy's definition of attrition is the departure of an enlistee before completing the first contractual term of service. The study uses cohort data files of enlisted personnel who entered the military from 2004 through 2014. The attrition rate differences were evaluated at different points in the first term: 12 months, 13–24 months, and 25–36 months. In addition to multivariate probit models to estimate attrition differences, the study also uses immigrant interviews to identify their motivations to join and stay in the Navy.

The results of the statistical analysis suggest that noncitizens have a significantly lower attrition rate compared with U.S. citizens, followed by immigrants from U.S. territories. According to the interview responses, it appears that noncitizens are motivated to join the Navy for better education and career opportunities provided to them and their families. The author concludes that noncitizens and immigrants are a valuable resource to the Navy and recommends policy makers find incentives to increase recruiting among these groups. The author also recommends areas of further research that study the resiliency of noncitizens compared to citizens, and study those who migrate from U.S. territories.

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LIST OF ACRONYMS AND ABBREVIATIONS

AFQT	Armed Forces Qualification Test
AVF	All Volunteer Force
DOD	Department of Defense
EO	Executive Order
ERB	Enlisted Review Board
FSS	Force Support Squadron
GED	General Education Diploma
INA	Immigration and Nationality Act
MAVNI	Military Accessions Vital to the National Interest
UCLA	University of California, Los Angeles
USCIS	United States Citizenship and Immigration Services

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I. INTRODUCTION

Throughout U.S. history, immigrants and noncitizens have brought great value to the military and to the nation itself. They have demonstrated their patriotism and gratitude by often paying the ultimate price: death. Immigrants contribute significantly to the country and its military with their diverse language skills, culture, demonstrated dedication and perseverance, and in a multitude of other ways.

This research evaluates the contributions of immigrants to the U.S. military, particularly the Navy. Additionally, the study seeks to identify the motivations of immigrants to join the U.S. military and to succeed. The research recommends policies that could aid in recruiting and retaining highly qualified immigrants.

The analytical research consists of two parts. The first part examines data received from the Defense Manpower Data Center (DMDC) on enlisted personnel to estimate differences in the demographic characteristics and military performance of immigrants. First-term attrition, or the departure of an enlistee before completing the first contractual term of service, is the primary measure of personnel performance. This is also the measure we use to compare performance of immigrants and non-immigrants. The second part of the study consists of interviews with noncitizens and immigrants who have joined the Navy as enlisted personnel or officers. The main purpose of the interviews is to identify and describe the motivations of immigrants who join the Navy. Decision makers can then better tailor recruiting efforts to this subgroup in future recruiting and retention policies.

This study compares early and overall first-term attrition for the following four groups: (1) noncitizens; (2) persons who migrate to the U.S. from a U.S. territory and thus possess statutory (not constitutional) citizenship; (3) U.S. citizens born in the territories (Puerto Rico, the Northern Marianas Islands, the Federated States of Micronesia, Guam, the U.S. Virgin Islands, American Samoa, and the Republic of the Marshall Islands); and (4) U.S. citizens born in the mainland. Persons with constitutional or statutory citizenship can become officers of the U.S. military. Noncitizens are only

considered eligible to join the enlisted ranks, and only if they possess the appropriate immigration clearances and documents.

The initial hypothesis regarding performance, based on previous research over several decades, is that service members born outside of the United States are generally more likely to complete a first term of service than their counterparts born in the United States or a U.S. territory. Further, Sailors born in a U.S. territory are less likely to attrite when compared with those born in the U.S. mainland.

A. PRIMARY AND SECONDARY RESEARCH QUESTIONS

(1) Primary Questions

1. How do immigrants perform in the U.S. Navy compared with their non-immigrant counterparts?
2. What motivates immigrants to join the U.S. Navy?
3. What motivates immigrants to succeed in the U.S. Navy?

(2) Secondary Questions

1. What role does resilience play in an immigrant's performance in the U.S. military?
2. Will the U.S. military be affected by shifting demographics nationally, and how could these trends affect the Navy's interest in recruiting immigrants?

B. PURPOSE OF THE STUDY AND RESEARCH QUESTIONS

This study provides useful information to assist the recruiting and retention processes for enlistees and officers in the U.S. Navy. Historically, immigrants have demonstrated that they can be valuable members of the U.S. military. With predicted changes in the demographic composition of the national population, it is important for the military to plan accordingly for future manpower challenges.

The primary purpose of this thesis is to study the performance of immigrants in the Navy as measured by early and overall first-term attrition rates. A secondary objective is to investigate the motivations for immigrants to join and succeed in service. The results of this study will aid policy makers in identifying and evaluating policies that

could help recruit and retain highly qualified immigrants for the U.S. Navy in the years ahead.

According to American Community Survey Briefs, between 2010 and 2012, 10.3 million noncitizens were residing in America. The same study found more than half of these noncitizens were between the ages of 25 and 34 years old; one-quarter were between 18 and 24 years old, the ideal age for military recruitment (2014). Assuming they meet existing enlistment criteria and selection standards, based on those briefs, roughly 2.6 million noncitizens could be in the Navy's pool of potential recruits.

C. ORGANIZATION OF THE STUDY

Chapter II provides a background and literature review of the history of noncitizens and immigrants in the U.S. military, focusing on the U.S. Navy. Included here are relevant laws, regulations, and policies that affect this minority group. Chapter III describes the data used in the present study. Chapter IV presents the results of regression analyses and summarizes responses from the interviews of Navy immigrant enlistees. Finally, Chapter V provides a summary of the results of the study, conclusions, and recommendations for policy makers and researchers.

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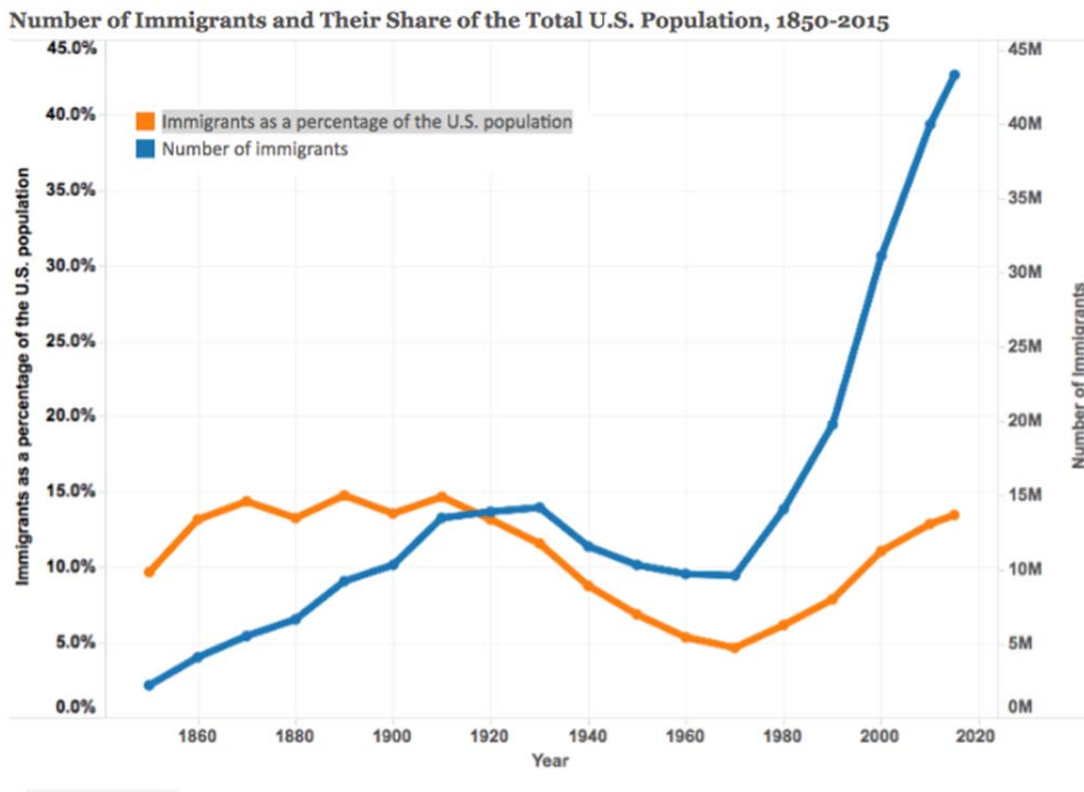
II. BACKGROUND AND LITERATURE REVIEW

This chapter presents a brief history of immigrants and noncitizens in the U.S. military, and more specifically, in the U.S. Navy. It shows evidence of immigrants and noncitizens' contributions and performance in the service. The chapter also provides a list of laws, policies, and regulations that affect minority groups in the service. Some of those policies have helped the military attract more immigrants and noncitizens to join the service. Since noncitizens attrite at a lower rate than citizens, a studying their behavior and motivations could better inform targeted recruitment.

According to Colby and Ortman, an exponential growth in immigrant numbers is expected. If the growth continues, an expected 41 percent increase of immigrants will represent over 61 percent of the population by 2050 (2015). Mark Thompson, using data from the Center for Immigrant Studies, reports that immigrants represented 5 percent of active duty individuals in 2012 (2012). This, however, is not representative of the immigrant population in the U.S. Steven Camarota reports that in 2014, there were 42.4 million or 13.3 percent immigrants in the United States, more than double the amount represented in the Armed Forces (2016). The U.S. Navy spends a tremendous amount of effort to make sure that the active duty population reflects the U.S. population; however, the all-volunteer force (AVF) does not support the goal with respect to the immigrant group.

Figure 1 displays both the number of immigrants residing in the United States and its percentage of the total U.S. population over time. The expected exponential growth in the immigrant population is presented in the upcoming years.

Figure 1. U.S. Immigrant Population 1850–Present. Source: “U.S. Immigrant Population and Share over Time, 1850–Present” (n.d.).



Figures 2 and 3 represent the demographic distribution that shows how many immigrants are at the age that they are allowed to serve; the minority group represents a very good opportunity for possible prospects to join the service. However, minorities are not well represented in the U.S. Navy. It is unclear whether this is due to immigrants not choosing to serve or due to language barriers that may make them ineligible to serve.

Figure 2. Age Distribution of Population Under Age 35 by Citizenship Status
2010–2012. Source: Acosta, Larsen, and Grieco (2014).

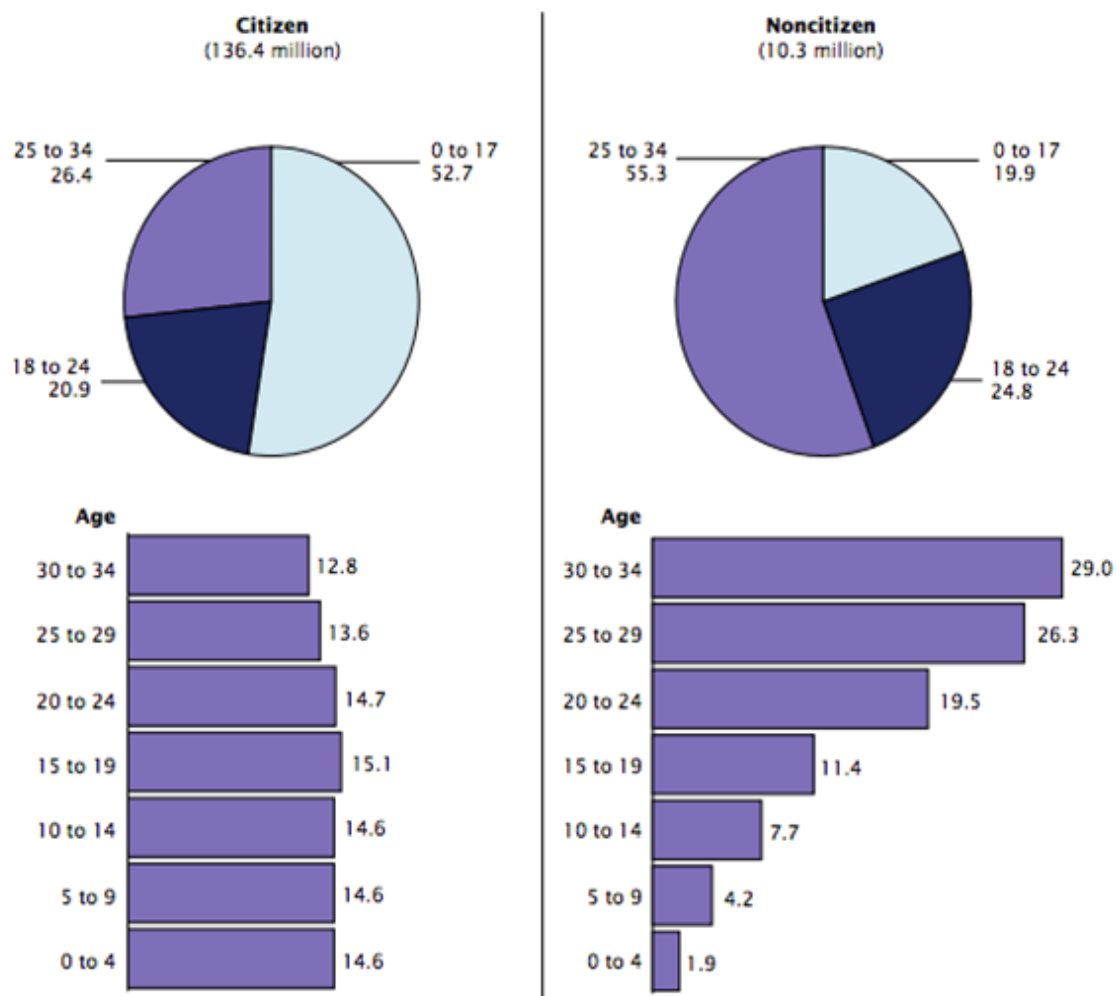
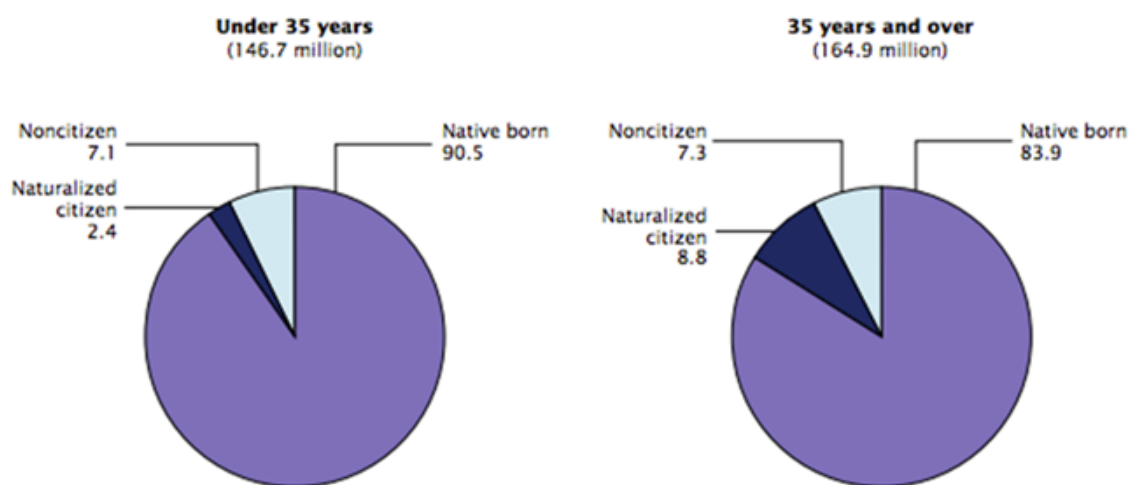


Figure 3. Nativity and Citizenship Status by Selected Age Group: 2010–2012.
Source: Acosta, Larsen, and Grieco (2014).



A. BRIEF HISTORY: NONCITIZENS IN THE U.S. MILITARY

The following section includes a brief history and studies of noncitizens in the U.S. military and the U.S. Navy.

1. Attrition

O’Neil and Senturk explore the history of immigrants in the U.S. military and their contributions from the Revolutionary War until 2004 (2004). This thesis focuses on the 2004–2014 period, looking at participation trends, practices, and policies. The study updates the history of immigrants in the military and speculates how immigrants might affect the U.S. military in the near future. Clearly, this topic is important, given the expected growth of the immigrant and noncitizen population in the United States.

This chapter reviews previous studies and published reports on the contribution of immigrants to the U.S. military, specifically to the Navy. The study will focus on noncitizen attrition and retention rates compared to citizens as measures of military performance. The objective is to establish the contribution of noncitizens in the U.S. Navy and to see and evaluate incentives in recruitment and retention.

2. Definition of Immigrants and Noncitizens

This study identifies four groups: (1) noncitizens; (2) persons who migrate to the U.S. from a U.S. territory and thus possess statutory (not constitutional) citizenship; (3) U.S. citizens born in the territories (Puerto Rico, the Northern Marianas Islands, the Federated States of Micronesia, Guam, the U.S. Virgin Islands, American Samoa, and the Republic of the Marshall Islands); and (4) U.S. citizens born in the mainland. Persons with constitutional or statutory citizenship can become officers of the U.S. military. Noncitizens are only considered eligible to join the enlisted ranks, and only if they possess the appropriate immigration clearances and documents.

3. Changes over Time

Throughout history, immigrants and noncitizens have brought a lot of value to the U.S. military and to the country itself. They have demonstrated their patriotism and gratitude by paying the ultimate price. Immigrants contribute significantly to the country and its military with their diverse languages and cultures, demonstrated dedication and perseverance, and in a multitude of other ways. The study summarizes prior literature on the value of immigrants to the U.S. military.

“Without the contributions of immigrants, the military could not meet its recruiting goals and could not fill its need for foreign language, translators, interpreters, and cultural experts,” (Stock, as cited in Can and Yalcinkanya, 2013, p. 9). The integration of noncitizens in the military improves on the understanding and knowledge of other cultures and interactions with them around the world (Yalcinkanya and Can, 2013). Noncitizens enrich the U.S. military in various ways:

- Culture
- Richer representation of nation’s diversity
- Expanded ideas and perspectives
- Enhanced problem-solving capabilities
- Manpower:
- Expanded pool of highly qualified recruits

- Expanded skills and abilities
- Relatively lower failure rates and higher retention
- Language
- Improved impressions and relations with allies
- Deeper understanding of other cultures
- Diverse practical talents
- Depth of commitment
- Demonstrated personal reliance
- Willingness to sacrifice
- Strong patriotic values

According to the Center of Immigrant Studies, an exponential growth in the immigrant group is expected. The same study notes that the trend projects a 41 percent increase by 2050, if the growth continues; by 2050, immigrants will represent over 61 percent of the population (2012).

Figure 4 shows the number of immigrants and the percentage they represent of the U.S. population from 1850 to 2015. As stated in the background and literature review section, The Center for Immigrant Studies has data from 2012 where immigrants represent 5 percent of active duty military. This, however, is not a perfect representation of the actual population of the United States. In 2014, almost 42.4 million or 13.3 percent of the U.S. population were immigrants, which is more than double the amount represented in the military forces (Steven Camarota, 2016). The U.S. Navy spends a tremendous amount of effort to maintain the equal representation of population and yet cannot achieve the goal with the AVF.

Figure 4 represents the number of immigrants and their percentage in the United States from 1850 to 2015 and illustrates their steady growth.

Figure 4. Number of Immigrants and Immigrants as Percentage of the U.S. Population, 1850 to 2015. “U.S. Immigrant Population and Share over Time, 1980–Present” (n.d.).

	Number of immigrants	Immigrants as a percentage of the U.S. population
1850	2,244,600	9.7
1860	4,138,700	13.2
1870	5,567,200	14.4
1880	6,679,900	13.3
1890	9,249,500	14.8
1900	10,341,300	13.6
1910	13,515,900	14.7
1920	13,920,700	13.2
1930	14,204,100	11.6
1940	11,594,900	8.8
1950	10,347,400	6.9
1960	9,738,100	5.4
1970	9,619,300	4.7
1980	14,079,900	6.2
1990	19,767,300	7.9
2000	31,107,900	11.1
2010	39,955,900	12.9
2011	40,377,900	13.0
2012	40,824,700	13.0
2013	41,348,100	13.1
2014	42,391,800	13.3
2015	43,290,400	13.5

Note: The term “immigrants” refers to people residing in the United States who were not U.S. citizens at birth. This population includes naturalized citizens, lawful permanent immigrants, refugees and asylees, legal nonimmigrants (including those on student, work, or other temporary visas), and persons residing in the United States without authorization.

Source: Migration Policy Institute tabulations of the U.S. Census Bureau’s 2010-2015 American Community Surveys and 1970, 1990, and 2000 Census data. All other data are from Gibson, Campbell and Emily Lennon, U.S. Census Bureau, Working Paper No. 29, Historical Census Statistics on the Foreign-Born Population of the United States: 1850 to 1990, U.S. Government Printing Office, Washington, DC, 1999.

B. LITERATURE REVIEW

The following section is a literature review of selected studies that have investigated the performance of noncitizens in the military compared to U.S. citizens.

1. Retention and Promotion

O'Neil and Senturk (2004) found that, when comparing U.S. citizens to noncitizens, the noncitizens attrite at an average rate of nine percentage points lower than citizens. Comparing noncitizens to citizens, they stay in the military beyond the first term at a rate that is 10 percentage points higher than citizens. Likewise, noncitizens are promoted at a rate that is nearly two percentage points higher than citizens. Furthermore, in all services, they found that “noncitizens have a significantly higher estimated probability of promotion to E-4” (p. 117).

2. Recruiting

Yalcinkaya and Can studied the effects of Executive Order (EO) 13269 on immigrants' accession in the U.S. military. The Executive Order, issued in 2002 by President George W. Bush, expedited the granting of citizenship to eligible military service members born outside of the United States (2013). According to Cunha, Sullivan, Can and Yalcinkaya, the Army had the highest number of immigrant accessions, followed by the Navy prior to and after the issuance of the Executive Order (2014). Yalcinkaya and Can found that Hispanics represent the greatest number of immigrant accessions. Their findings show that the Executive Order had no effect on citizen accessions but it increased noncitizen ones (2013).

Cunha, Sullivan, Can, and Yalcinkaya (2014), used a difference in difference model to capture the before and after effect of the EO. They found evidence that the “EO may have incentivized noncitizen recruits to join some of the less combat intensive services such as Air Force and Coast Guard and discouraged them from joining the Marines, commonly known to be the most combat intensive service.” (p. 4).

a. Growth of Immigration in the Military

According to United States Citizenship and Immigration Service (USCIS) statistics through Fiscal Year (FY) 2015, 109,321 members of the military have been naturalized since October 1, 2001 (2016).

3. Retention and Attrition

Hattiagandi, Quester, Lee, Lien, and MacLeod (2005) studied noncitizens in the military. The authors analyze the accession data from FY1998 to FY2003 and separate the analysis into two periods: the first period represents FY1988 to FY1994, and the second FY1995 to FY2002. The authors found “that noncitizens perform remarkably well and have lower” attrition rates in the first three months and 36 months of service. They observed one million recruits who entered the service between FY1995 through FY2000. Out of close to 1 million recruits, over 46,000 were noncitizens. When they compared white citizens to noncitizens, they found that white citizens had an attrition rate of 9 to 20 percentage points higher than noncitizens. In the first period they found that noncitizens had 1.8 percentage points lower attrition rate than citizens. In the second period, they found that immigrants had attrition rates that were 3.7-percentage points lower than white citizens.

Hattiagandi et al. (2005) noted that despite the importance of the topic, there were not many prior studies that identified possible ways to attract more immigrants and noncitizens to join the service.

4. Retention and Depth of Commitment

McIntosh, Sayala, and Gregory suggested that a large noncitizen population is qualified to serve in the military, but this topic has not been thoroughly explored. This study, similar to prior research, shows that the attrition rate in noncitizens is lower compared to their citizen counterparts. The study shows that noncitizens are less likely to be high-quality recruits because the majority of noncitizen recruits only possesses a high school diploma. They found that noncitizens feel more responsible to serve and that they have a stronger attachment to the service. The researchers believe that noncitizens feel

that now that the United States is *their* country, they have a better work ethic. Their findings: noncitizens are less likely to attrite at 3, 36, or 48 months after accession, and citizenship status has a large effect on attrition on the noncitizen group (2011).

According to the study *Noncitizen Troops Stay in the U.S. Military Longer*, more than 70,000 noncitizen recruits were signed in the decade after the September 11, 2001 attack, and those recruits have stayed longer in the service throughout the roughest time for the military to recruit and maintain the force (2012).

5. Economic Recessions

Earlier it was noted that during the year 2010 there was a significant decrease in the attrition rate for all groups. The decrease can be attributed to the economic recession in 2010. Arkes and Mehay (2012) found that high home-state unemployment rate has a significant impact on attrition in the first two years of service. In their study, they analyzed attrition at 6 months, 12 months, and 24 months, and 36 months. Only the latter rate was not significantly impacted by the increase of home-state unemployment rate – all other attrition measures showing sensitivity to economic conditions.

More specifically, Arkes and Mehay (2012) found that an increase in unemployment rate at home-state is associated with a decrease in attrition. “A one percentage point increase” in home-state unemployment rate is associated with a “0.5 percentage point (5%) decrease” in the 6-month attrition rate, a “0.002 percentage point decrease in the 12-month attrition rate” (4 percent decrease), and a “0.3 percentage point decrease” in the 24-month attrition rate (4 percent). The 36-month attrition window did not represent significant impact. (p. 133)

C. RELEVANT LAWS, REGULATIONS, POLICIES, AND PROPOSALS

Several laws have been passed over the past two decades that have had an important and direct influence on immigrants’ service in the U.S. military. These include an updated naturalization policy, immigration and nationality act, requirements for noncitizens to join the military and the U.S. Navy, the DREAM Act, and Military Accessions Vital to the National Interest (MAVNI).

1. Naturalization Policy

It is important to start with an explanation of the naturalization policy. This policy affects every noncitizen in the United States, whether military or not, and outlines the process of how a noncitizen can become U.S. citizen. According to U.S. Citizenship and Immigration Services, “citizenship through naturalization is the process by which citizenship is granted to a foreign citizen or national after he or she fulfills the requirements established by Congress in the Immigration and Nationality Act (INA)” (2013 n.p.).

The original requirement for a noncitizen in the service to get naturalized was three years of service. Section C.2 explains how Executive Order 13269 helps noncitizens in the military to accelerate the process from three years to after one day of service.

2. Immigration and Nationality Act

Executive Order (EO) 13269 was signed on July 3, 2002, to reduce “the waiting time for military service members to apply for citizenship, from three years of honorable service to one day of service” (Cuhna, Sullivan, Can, and Yalcinkaya, 2104, p. 2). The authors pointed out that EO13269 “[i]s a unique recruiting policy that was intended to increase military enlistments with no direct monetary outlay: offering noncitizen permanent residents the ability to expedite the citizenship process by joining the military” (2014, p. 2).

Studies have shown the positive impact of this Executive Order on recruiting and retention of noncitizens in the military. The changes were an effort to help those who serve to get them expedited citizenship while serving. Section B.2 discussed one of the studies that tries to identify the effect of the Executive Order on recruiting, attrition, and retention.

3. Requirements for a Noncitizen to Join the Military

Federal law requires that an immigrant must be a legal resident to join the military. To become an officer in the military, an applicant must be a U.S. citizen. Additionally, current laws prohibit granting a security clearance to a noncitizen, which

would exclude a noncitizen's eligibility from any job that requires a security clearance. The Navy, like the other branches of the Armed Forces, has a limitation on the type of job a noncitizen can be assigned. For example, jobs that cannot be assigned are those that require secret or top secret clearance. According to McIntosh, Sayala, and Gregory, the Navy is the most restricted, with only 30 jobs that do not require citizenship (2011).

4. The DREAM Act

The DREAM Act was proposed by Congress in 2001 as a plan to assist the military's recruiting efforts. The last bill was introduced in 2011 by the Senate and House. Even though the bill was introduced in 2011, the DOD included it as part of the strategic plan from 2010 to 2012, as though it was law, even though it was not signed.

The proposed legislation sought to help those who grew up in the United States and give them a chance to contribute to the country's well-being by serving in the U.S. military or pursuing higher education. The idea was to help those who had been in the United States since they were children and grant them legal status for their contribution to society (White House, 2010).

a. Some of the DREAM Act's Benefits

The DREAM Act was created to help with the recruiting efforts during one of the toughest times for the military to recruit and retain a qualified force. "The DREAM Act is also a part of the Department of Defense's 2010–2012 Strategic Plan to assist the military recruiting efforts" (2010).

Secretary of Education Arne Duncan stated that passing the DREAM Act would allow "these young people to live up to their fullest potential and contribute to the economic growth of our country" (White House, 2010, n.p.). This act would potentially give more people the opportunity to get a higher education and contribute to the country to be more competitive in the global economy.

The DREAM Act could have a positive impact on America's economy. According to the nonpartisan Congressional Budget Office, "the DREAM Act in its current form will cut the deficit by \$1.4 billion *and increase government revenues by*

\$2.3 billion over the next 10 years” (2010). A study done by University of California at Los Angeles in 2010 proposed that, depending on how many of those illegal immigrants get their legal status, it can represent an impact to the economy between \$1.4 to 3.6 trillion in taxable income over the course of their careers, the contribution is substantially higher than not having legal status or education (White House, 2010).

5. Military Accessions Vital to the National Interest

MAVNI was created by the U.S. military to increase recruiting in certain high-priority jobs in the Army, such as licensed health care professionals and bilingual individuals. According to the U.S. Army, “MAVNI is a recruiting program that allows noncitizens with in demand skills to join the Army in exchange for expedited U.S. citizenship” (2016).

This is a good recruiting tool that can be applied or used in the other branches of the Armed Forces. MAVNI shows that immigrants might have the skills and can fill some of the hardest jobs but sometimes, due to the fact that they are not citizens, they cannot be recruited. The Army does a really good job helping and giving immigrants and noncitizens the opportunity to join and perform well in the service. They also have a language school available to help recruits with English as a second language.

6. The Economic Value of Citizenship for Immigrants in the United States (September 2012)

In *The Economic Value of Citizenship for Immigrants in the United States*, Sumption and Flamm analyze why immigrants seek citizenship and what blocks them. The 2012 study found that naturalized citizens have a wage premium of at least 5 percent and “this premium appears to be larger for Latino immigrants and for women.” This study also found that naturalized citizens earn between 50 and 70 percent more than noncitizens (p. 14). This study also shows that citizenship is an indicator and a facilitator for the successful integration of immigrants in America’s society. They compared naturalized and noncitizen populations, and, to remove bias from the study, statistically controlled for observables such as higher education and U.S. experience. The study found that citizenship has a positive impact on immigrants’ income and it is better in society

integration. The study finds that in 2010 there was a spike; naturalized citizens earned 8 percent more than noncitizens. This study controlled for occupation, language ability, country of origin, and duration of residence in the United States to adjust the gap of 41 percent. The same study finds that “naturalization is associated with both an immediate earnings boost within two years of gaining citizenship, and faster earnings growth in subsequent years” (2012, p. 12).

Laura Barker and Jeanne Batalova, in *The Foreign Born In The Armed Services*, noted that of all the military branches, the Navy ranks the highest of all the services for their representation of foreign-born personnel — 8 percent. The study includes in their definition of foreign-born personnel both citizens and noncitizens born outside the U.S. The study reported that, as of May of 2006, 5 percent of total active duty recruits are foreign born.

Some studies show that the military provides more benefits to immigrants than what immigrants can return to the military. And some immigrants agree. They appreciate very much what they can obtain in their military career in the United States compared to what their home country can give them. “The benefits the Air Force offers are way too good to pass up,” said Senior Airman Duzaghi Tafie, 509th Force Support Squadron (FSS) relocations representative. “When I was back home in Africa, the rules and way of life was very similar to that of the military, so I’m basically getting paid more and obtaining benefits without having the culture shock. I’m able to get education and now that I’m a citizen I can reenlist and extend my military career” (“The U.S. military helps naturalize noncitizens,” n.d.).

D. BASIS FOR USING ATTRITION, RETENTION, AND PROMOTION MODELS

Understanding differences in attrition and retention behaviors between immigrants and citizens is extremely important for policy-makers. The Navy cost of recruiting and training expenditures average \$19,000 yearly for every new active duty enlisted recruit. Attracting recruits with lower attrition rates assures that these initial training and recruiting costs are not wasted. Arkes and Mehay affirm that “attrition is a

indicator of a recruit performance, and military applicants are screened based on their predicted probability of successfully completing the first term of service” (2012 p.126). Consequently, this study will compare attrition rates among the various immigrant groups to assist policymakers in their accession and retention policies.

E. SUMMARY

Immigration is a very important topic for the future recruitment and retention in the military because of immigrants’ contribution and loyalty to serve and stay longer than the citizens. For the purpose of this study, we focus on the Navy. This chapter presented a review of studies to support the evidence of their positive contributions and lower attrition rate when compared with citizens. The next chapter describes the data and the methodology that was used for this study.

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III. DESCRIPTION OF THE DATA

This chapter presents data that was obtained from the U.S. Defense Manpower Data Center (DMDC). It contains enlistment information for Sailors who joined the Navy from 2004 to 2011. Each Sailor was followed for four years until 2015, or until they exited from the Navy, whichever occurred earlier. The data includes accession and attrition dates for enlistees, immigration status, education level, Armed Forces Qualification Test (AFQT) scores, as well as basic demographic information.

A. DEPENDENT VARIABLES

This thesis compares attrition rates for immigrants and citizens during the first term of service for Navy cohorts entering from 2004 to 2011. Attrition is expensive for the Navy, because it costs a lot to recruit, train, and retain a Sailor. According to Arkes and Mehay, the “average recruiting cost for Navy recruits is over \$19,000” (2013 p. 126). In this present study, attrition is analyzed at different points during the first term. The first attrition measure looks at attrition during the first year of service (12 months) when the new recruit receives basic military training and advance skill training (A-school). The second attrition measure analyzes the period from 13 to 24 months in service. The third and last attrition measure looks at attrition from 25 to 36 months, which is near to the end of the four-year contract. In the fourth year, Sailors begin making reenlistment decisions, so we do not formally measure attrition in the fourth year.

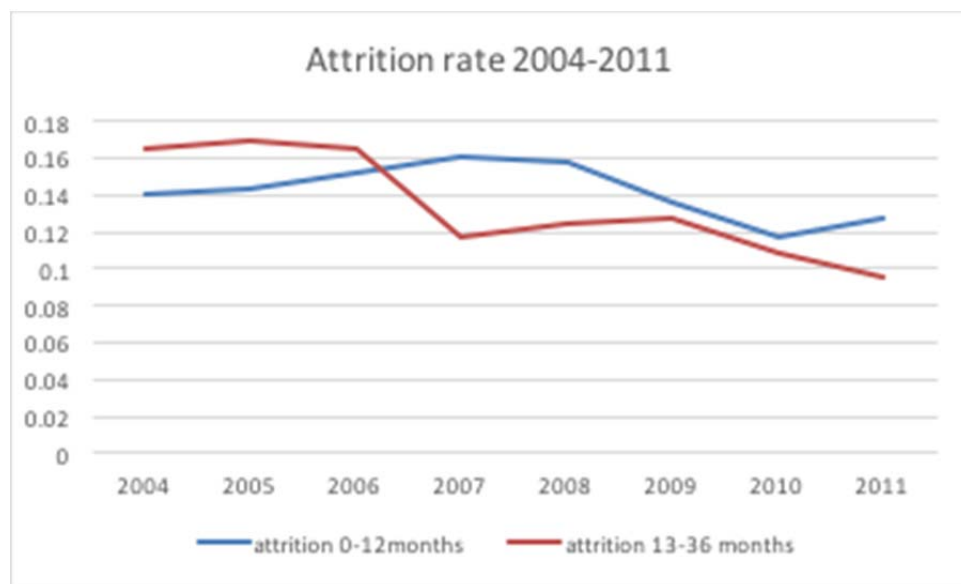
B. DEMOGRAPHIC VARIABLES

To analyze attrition differences between immigrants and nonimmigrants, we distinguish the following groups: (1) non-US citizens, (2) U.S. citizens born outside the U.S. (naturalized), (3) U.S. citizens from the U.S. territories, and (4) U.S. citizens born on the mainland.

The following graphs outline attrition rates for the four groups. Attrition is defined as involuntary job separation prior to the end of the enlistment term, that is, separation due to misconduct, unproductive job performance, or family reasons.

Figure 5 represents the Navy attrition rate from 2004 to 2011. The graph separates attrition by year: 12 months and 13–36 months. The higher attrition rate occurs during the first year of joining the Navy. This is confirmed by all prior attrition studies. As shown in the figure, attrition rate decreased after 2008, possibly due to the economic recession during that time. Several studies show that economic downturns have a negative effect on attrition, due to reduced civilian job opportunities (Arkes and Mehay, 2012). The multivariate analysis that follows includes year dummies to control for the effect of economic fluctuations on attrition from year to year.

Figure 5. Attrition Rate between 2004 and 2011.



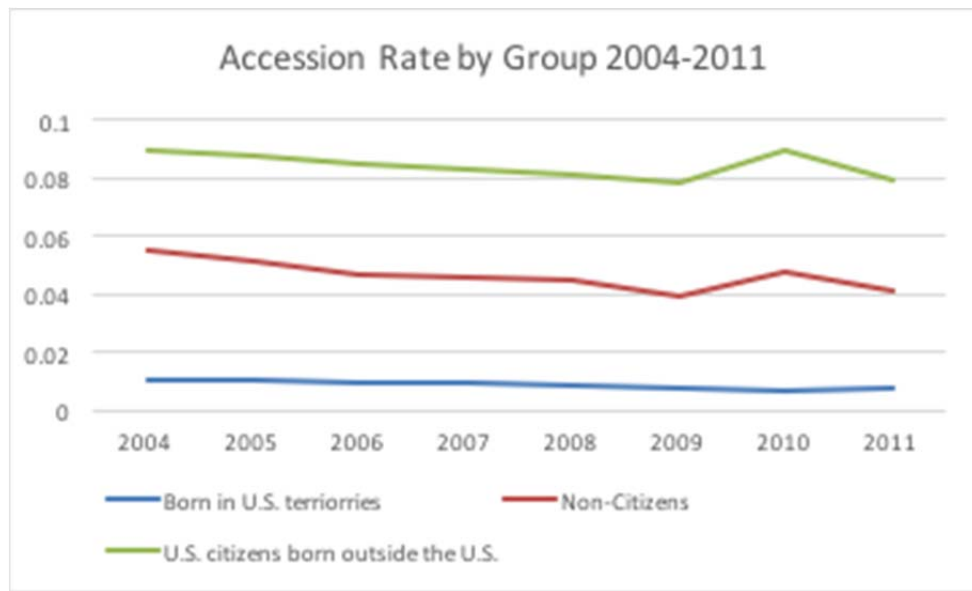
Data obtained from U.S. Defense Manpower Data Center, 2015

C. ACCESSION RATE BY GROUPS BETWEEN 2004–2011

Figure 6 depicts the accession rate by each immigrant/citizen group and year. Accession rates are calculated by dividing the number of people accessing in each group by the total number of accessions for the year. The data includes all Navy accessions between 2004 and 2011. It shows a steady and minimal decrease until the year 2010. During that year, the Navy determined that certain ratings were overmanned, and engaged the Enlisted Retention Board (ERB) to retain the top-quality enlistees. The ERB

affected approximately 3,000 Sailors, who were involuntarily separated from the Navy. While addressing short-term overflow, in the long run, it resulted in fleet undermanning and ultimately affected the force readiness. This led the Navy to increase the effort to recruit over 6,000 Sailors in order to fill some of those billets. Also, the involuntarily separated Sailors were later offered bonuses to return to service because the fleet was undermanned.

Figure 6. Accession Rate between 2004 and 2011.



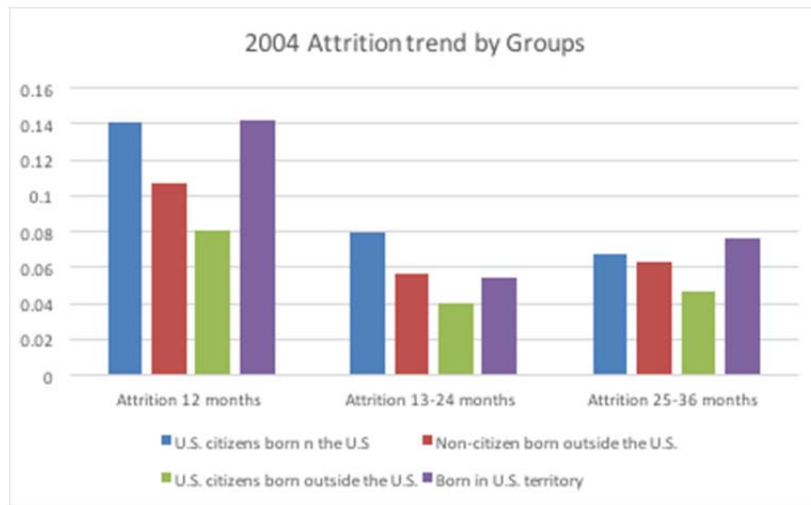
Note: The accession rate is calculated by dividing the number of recruits in a specific group by the total number of accessions in the given year. The accession rate for U.S. citizens born on the mainland is equal to one minus the accession rates for the other three groups taken together. Data obtained from U.S. Defense Manpower Data Center, 2015

D. ATTRITION RATE BY GROUPS BETWEEN 2004 TO 2012

Figures 7 to 15 show attrition trends for each year (2004-2012) for each citizen/immigrant group. There is a similarity in the pattern of the 12-month, 13–24 month, and 25–36 month attrition rates. Each group presents similar behavior year after year, with few exceptions discussed in the following text. The group that shows the highest attrition rate year by year includes U.S. citizens born on the mainland. This group is followed by U.S. citizens born in U.S. territories. The group with the smallest attrition rate includes U.S. citizens born outside the United States. This might be due to the value that immigrants

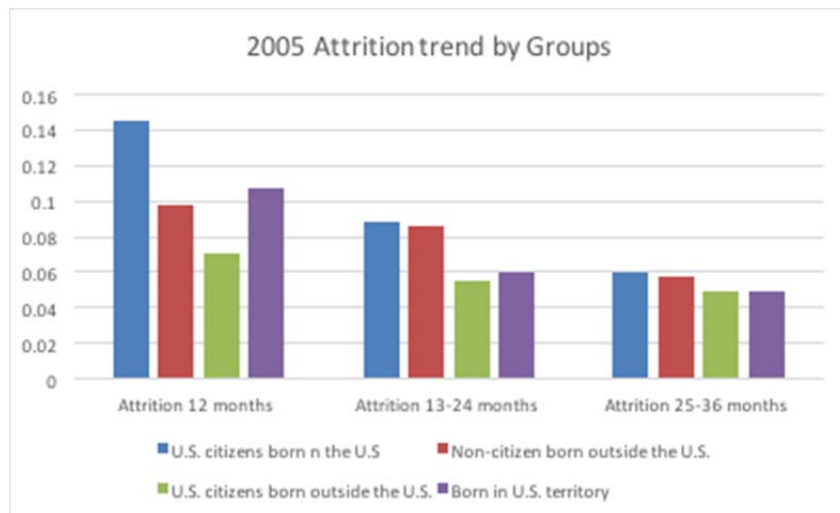
place on earning their citizenship and military service is a way toward this goal and later integration into U.S. society. In every group, the highest rate of attrition is in the first 12 months of service. The closer the end of contract (4 years), the lower the attrition rate for each group.

Figure 7. Attrition Trend 2004.



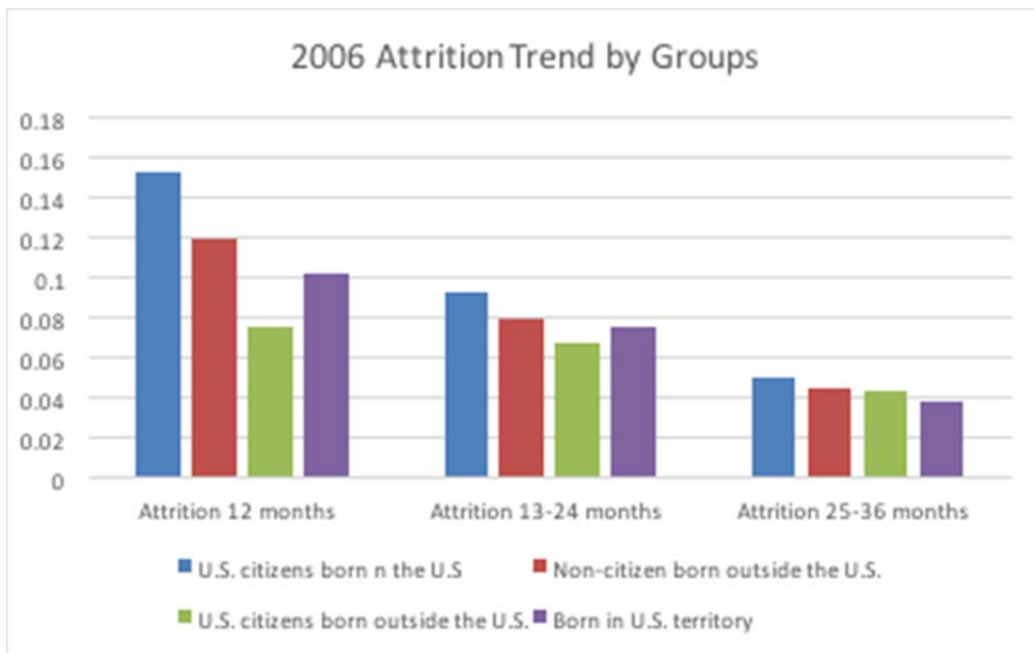
Data obtained from U.S. Defense Manpower Data Center, 2015

Figure 8. Attrition Trend 2005.



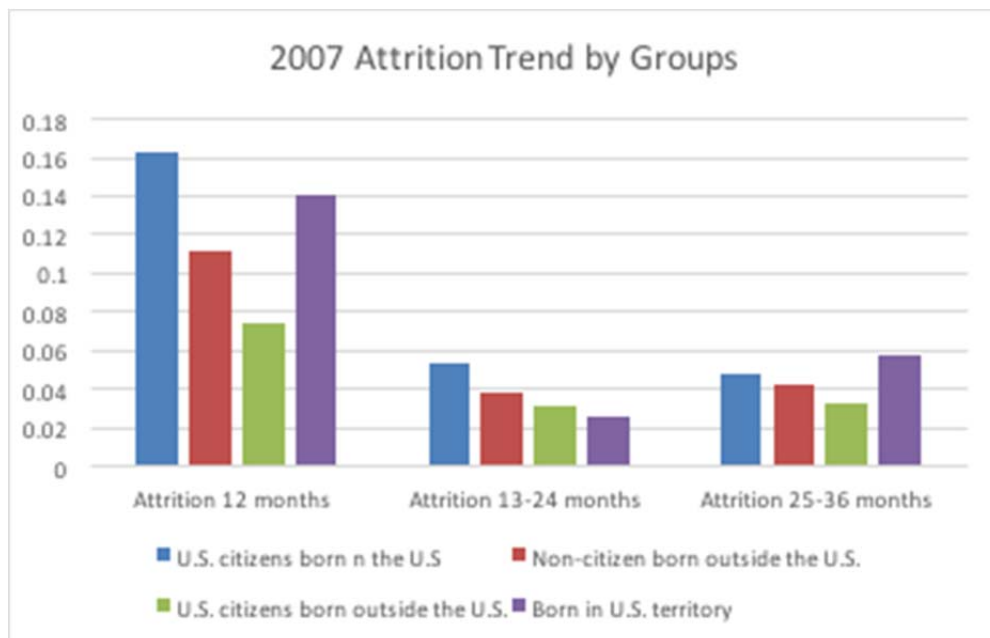
Data obtained from U.S. Defense Manpower Data Center, 2015

Figure 9. Attrition Trend 2006.



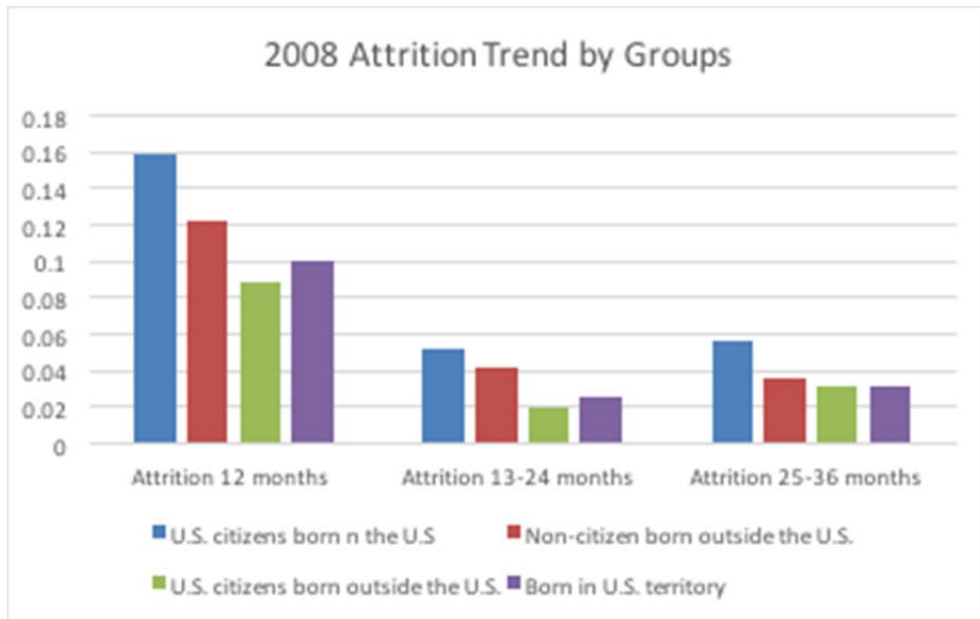
Data obtained from U.S. Defense Manpower Data Center, 2015

Figure 10. Attrition Trend 2007.



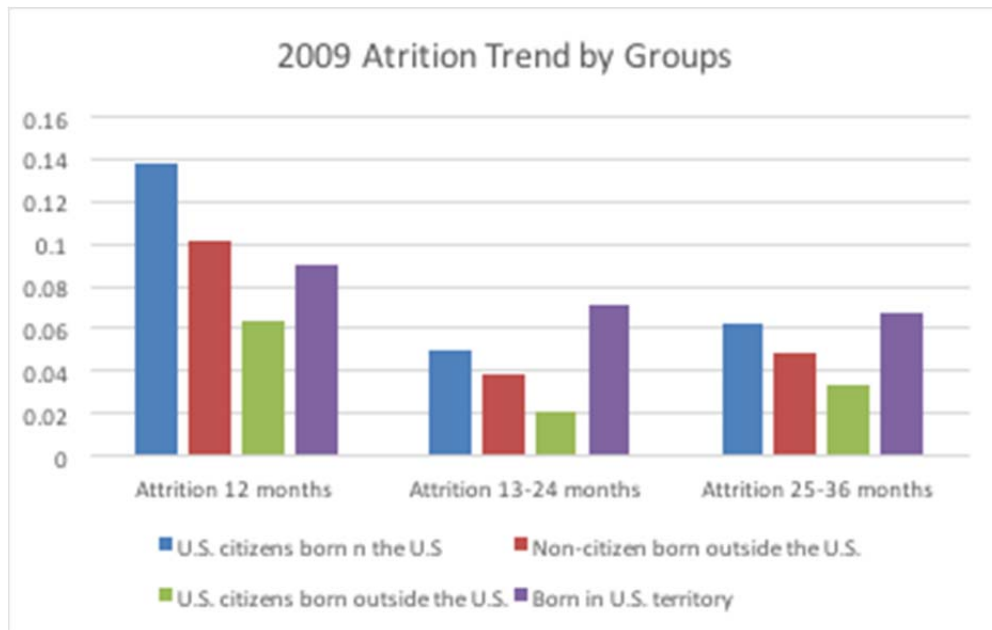
Data obtained from U.S. Defense Manpower Data Center, 2015

Figure 11. Attrition Trend 2008.



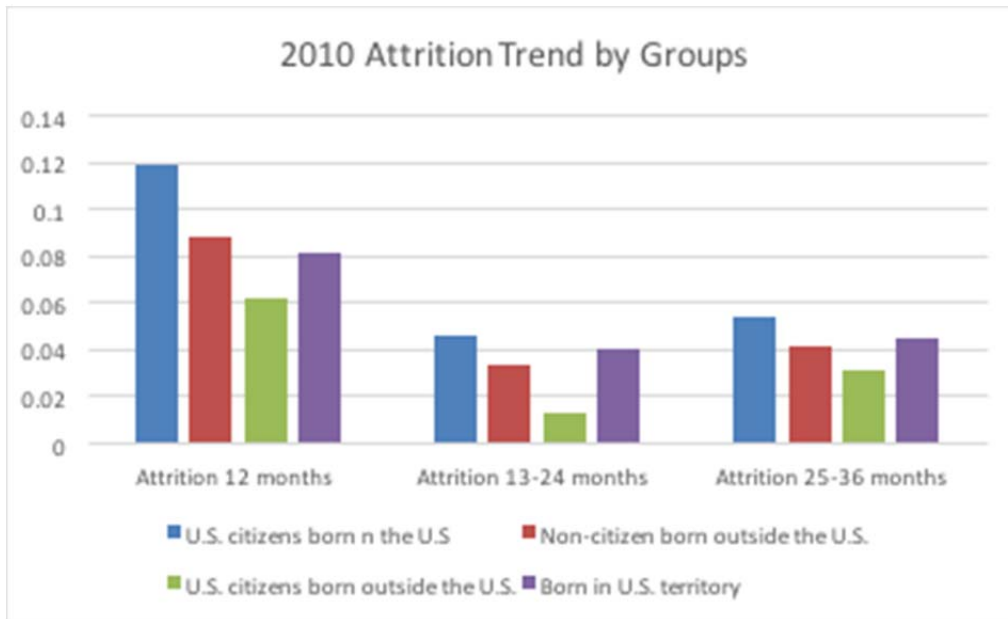
Data obtained from U.S. Defense Manpower Data Center, 2015

Figure 12. Attrition Trend 2009.



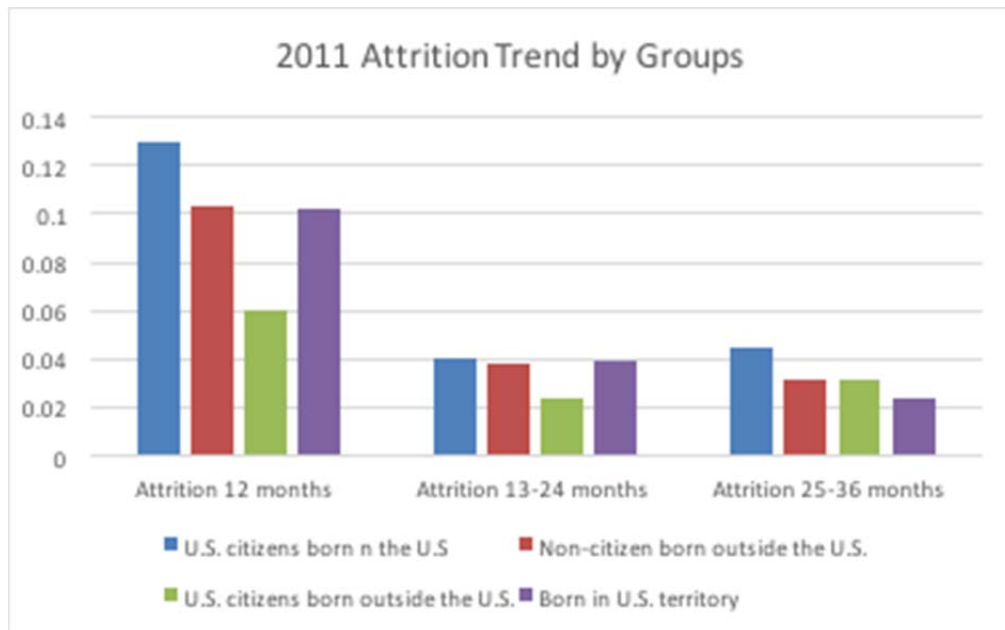
Data obtained from U.S. Defense Manpower Data Center, 2015

Figure 13. Attrition Trend 2010.



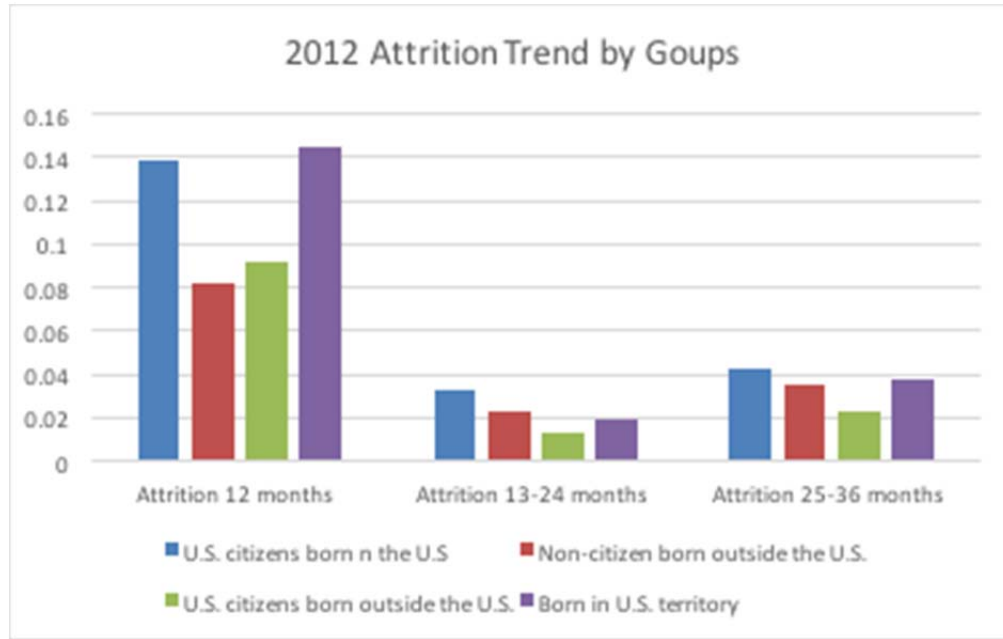
Data obtained from U.S. Defense Manpower Data Center, 2015

Figure 14. Attrition Trend 2011.



Data obtained from U.S. Defense Manpower Data Center, 2015

Figure 15. Attrition Trend 2012.



Data obtained from U.S. Defense Manpower Data Center, 2015

In addition to attrition variables, we investigate demographic variables and variables measuring cognitive ability. More specifically, we generate binary variables for gender (*female*), marital status (*married*) and various race categories (*African American*, *American Indian/Alaskan*, *Asian*, *Hawaiian/Pacific Islander*, and *Other Race*).

Next, we create dummies for various levels of education (*HS Graduate*, *GED*, *Some College*, *College Graduate*). We include raw AFQT scores, but delete observations with AFQT scores below 30 points. A minimum requirement for enlistment is to score 35 points in the AFQT; however, some recruits with slightly lower scores may still be able to enlist by obtaining a waiver.

A statistical summary of all dependent and independent variables by group is shown in Table 1. The noncitizen group appears to have lower attrition rate in every category, followed by U.S. citizens born in the U.S. territories. Noncitizens also appear more likely to be college graduates but still show lower AFQT scores, potentially due to the language barrier.

Table 1. Summary Statistics for the Independent Variables By Groups.

Variable	Mainland-born Citizens	Citizens born outside the US	Citizens born in U.S. territories	Non- citizens
12-month attrition	0.139	0.102	0.110	0.074
13–24 month attrition	0.054	0.043	0.043	0.030
25–36 month attrition	0.046	0.038	0.042	0.032
Female	0.203	0.223	0.214	0.220
African American	0.182	0.191	0.318	0.307
American Indian/Alaskan	0.057	0.027	0.014	0.013
Asian	0.021	0.256	0.054	0.338
Other Race	0.063	0.070	0.047	0.044
Hawaiian/Pacific Islander	0.008	0.047	0.075	0.047
Married	0.061	0.099	0.137	0.225
HS graduate	0.875	0.822	0.827	0.766
GED	0.002	0.001	0.001	0.000
Some college	0.019	0.026	0.015	0.031
College graduate	0.046	0.099	0.107	0.145
AFQT score	66	65	58	58
Observations	359,152	15,156	3,393	17,169

Data obtained from U.S. Defense Manpower Data Center, 2015

While these summary statistics are informative, simple sample averages cannot show whether the differences among citizen groups are statistically significant, especially after controlling for key explanatory variables. The next chapter will introduce the multivariate regression models, which estimate differences in attrition rates among the immigrant groups after controlling for all the explanatory variables that typically explain attrition in prior studies.

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IV. METHODOLOGY/MULTIVARIATE ANALYSIS

To compare the attrition rates between the various immigrant groups, multivariate regression models are used. The model includes all observable variables, including demographics, education level, AFQT scores, and marital status. The models were estimated via Probit due to the binary nature of the dependent variable.

A. ATTRITION RATE

This is the proposed model to analyze the attrition rate differences among the groups:

$$\text{Attrition rate} = \Phi(\beta_0 + \beta_1 \text{Naturalized} + \beta_2 \text{US Territories} + \beta_3 \text{Non Citizen} + \beta_4 \text{Race} + \beta_5 \text{married} + \beta_6 \text{GED} + \beta_7 \text{somecoll} + \beta_8 \text{College} + \beta_9 \text{AFQT} + u) \quad (1)$$

The control group for every regression model includes U.S. citizens born in the mainland of the United States. Attrition models were estimated separately for 12, 13–24, and 25–36 months.

B. ESTIMATION RESULTS

Here, we separately discuss the findings for each attrition variable. Each model is estimated via probit. For each model, the partial effects of the independent variables are also calculated.

1. 12-Month Attrition Rate

The results of the 12-month attrition rate analysis are displayed in Table 2. Column (1) provides the coefficients from the probit estimation, whereas column (2) displays the partial effects for each independent variable. It is the second column that provides the magnitudes of the effects of the control variables.

In general, all the groups identified have lower attrition rates than U.S. citizens born in the mainland. More specifically, the 12-month attrition rate for noncitizens is 6 percentage points lower than mainland-born U.S. citizens. Naturalized recruits and those born in the U.S. territories have 12-month attrition rates that are about 3 percentage

points lower than U.S. citizens born in the mainland. All these differences are significant at the 1 percent level.

Table 2. 12-Month Attrition Models.

	(1)	(2)
	Probit 12-month attrition	Partial Effect 12-month attrition
U.S. citizens born outside the U.S.	-0.145 (0.015)***	-0.029 (0.003)***
U.S. citizens born in U.S. territories	-0.152 (0.030)***	-0.030 (0.005)***
Noncitizens	-0.318 (0.016)***	-0.057 (0.002)***
Female	0.219 (0.006)***	0.050 (0.001)***
Black	-0.088 (0.007)***	-0.018 (0.001)***
American Indian	0.029 (0.011)***	0.006 (0.002)**
Asian	-0.192 (0.015)***	-0.037 (0.003)***
Other Race	-0.024 (0.011)**	-0.005 (0.002)**
Pacific Islander	-0.187 (0.026)***	-0.036 (0.004)***
Married	0.046 (0.010)***	0.010 (0.002)***
GED	0.377 (0.058)***	0.098 (0.018)***
Some College Education	0.161 (0.017)***	0.037 (0.004)***
College Graduate	-0.140 (0.013)***	-0.028 (0.002)***
AFQT Scores	-0.005 (0.000)***	-0.001 (0.000)***
Constant	-0.806 (0.011)***	
<i>Number of Enlisted Sailors</i>	389,676	389,676

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; data obtained from U.S. Defense Manpower Data Center, 2015

As shown in prior studies, females have higher attrition rates. The data in this study shows that females are more likely to attrite than males by about 5 percentage points. All race categories, except for American Indians, are less likely to attrite in the

first 12 months. Married recruits are 1 percentage point more likely to attrite than single recruits. People with a GED are 10 percentage points more likely to attrite in the first 12 months than those with a high school diploma. Similarly, those with some college education are 4 percentage points more likely to attrite in the first year compared to high school graduates. However, enlistees with a college degree are 3 percentage points less likely to attrite in the first year. As expected, higher AFQT scores are associated with lower first year attrition.

2. 13–24–Month Attrition Rate

Prior studies as well as data in this study indicate that the higher attrition rate occurs during the first year in the service and it decreases with time. Next, the study investigates attrition for the period of 13–24 months and 25–36 months.

Table 3 provides both the probit coefficients and the partial effect for model (1) when using attrition during 13–24 months as the dependent variable. The attrition rate at the 13–24 months attrition for noncitizens is 2.1 percentage points lower than mainland-born U.S. citizens and statistically significant, holding everything else constant. Naturalized citizens are 0.6 percentage points less likely to attrite in the second year of service than mainland-born U.S. citizens. Finally, U.S. citizens born in the territories are 1.1 percentage points less likely to attrite in the second year of service.

Table 3. 13–24 Month Attrition Rate.

	(1)	(2)
	Probit coefficients 13–24 month attrition	Partial Effects 13–24 month attrition
U.S. citizens born outside the U.S.	-0.062 (0.019)***	-0.006 (0.002)***
U.S. citizens born in U.S. territories	-0.117 (0.040)***	-0.011 (0.003)***
Noncitizens	-0.234 (0.021)***	-0.021 (0.002)***
Female	-0.073 (0.009)***	-0.007 (0.001)***
Black	0.028 (0.009)***	0.003 (0.001)***
American Indian	0.096 (0.014)***	0.011 (0.002)***
Asian	-0.127 (0.020)***	-0.012 (0.002)***
Other Race	-0.087 (0.015)***	-0.009 (0.001)***
Pacific Islander	-0.118 (0.034)***	-0.011 (0.003)***
Married	-0.098 (0.014)***	-0.010 (0.001)***
GED	0.564 (0.064)***	0.091 (0.014)***
Some College Education	0.172 (0.022)***	0.021 (0.003)***
College Graduate	-0.158 (0.018)***	-0.015 (0.001)***
AFQT Scores	-0.003 (0.000)***	-0.000 (0.000)***
Constant	-1.369 (0.014)***	
<i>Number of Enlisted Sailors</i>	389,676	389,676

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; data obtained from U.S. Defense Manpower Data Center, 2015

3. 25-36 Month Attrition Rate

Table 4 provides the estimation results for attrition occurring during the third year of service. The attrition rate at 25–36-months for noncitizens is 1.2 percentage points lower than citizens. The difference between the attrition rate of U.S. citizens born in the territories and those born in the mainland is no longer statistically significant. Naturalized citizens are 0.5 percentage points less likely to attrite in the third year than mainland-born U.S. citizens.

Interestingly, the attrition differences between the groups identified in this study have narrowed in the second year of service.

Overall, the attrition rate during the third year is substantially lower compared to the first year, as noted in numerous prior attrition studies. Of particular interest is the finding that females have similar third year attrition rates compared to men. This suggests that the overall high attrition rates of females are primarily driven by early attrition.

Table 4. 25–36 Month Attrition Rate.

	(1)	(2)
	Probit Coefficients 25-36 month attrition	Partial Effects 25-36 month attrition
U.S. citizens born outside the U.S.	-0.055 (0.020)***	-0.005 (0.002)***
U.S. citizens born in U.S. territories	-0.061 (0.040)	-0.005 (0.003)
Noncitizens	-0.148 (0.021)***	-0.012 (0.002)***
Female	0.011 (0.009)	0.001 (0.001)
Black	0.053 (0.009)***	0.005 (0.001)***
American Indian	0.082 (0.015)***	0.008 (0.002)***
Asian	-0.092 (0.021)***	-0.008 (0.002)***
Other Race	-0.050 (0.015)***	-0.005 (0.001)***
Pacific Islander	-0.081 (0.035)**	-0.007 (0.003)**
Married	-0.017 (0.014)	-0.002 (0.001)
GED	0.298 (0.075)***	0.036 (0.011)***
Some College Education	0.140 (0.023)***	0.015 (0.003)***
College Graduate	-0.125 (0.018)***	-0.011 (0.001)***
AFQT Scores	-0.003 (0.000)***	-0.0001 (0.000)***
Constant	-1.524 (0.015)***	
<i>Number of Enlisted Sailors</i>	389,676	389,676

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; data obtained from U.S. Defense Manpower Data Center, 2015

C. SUMMARY

In sum, attrition rates in the first, second, and third year appear significantly lower for the noncitizen group, followed by naturalized citizens, and the group of U.S. citizens born in the U.S. territories. These findings are consistent with Hattiagandi, Quester, Lee, Lien, and MacLeod who found that noncitizens have an attrition rate that is 9–20 percentage points lower than citizens in their first 36 months in the service (2005). In the following section an interview of a small, non-randomly selected group was conducted to investigate immigrants' motivations to join and stay in the Navy.

D. INTERVIEWS

To gain a deeper understanding on individuals who currently serve the Navy as noncitizen or immigrant enlistees, one must study their motivations to join and what makes them to want to perform better and stay in the Navy. The best way to explore this question is interviewing them and asking them for their personal experiences. This section discusses results from interviews with nine enlisted Sailors. Although this sample is small and not randomly selected, the interviewees are from varying geographic areas across the U.S. Filipinos have comprised one of the biggest groups of immigrants in the U.S. Navy since 1952. Table 5 shows the national origins of the nine interviewees.

Table 5. National Origin of Interviewees.

Philippine Islands	2
Dominican Republic	2
Africa	1
Haiti	1
Puerto Rico	1*
Mexico	1
Armenia	1

1. Profile of Interviewees

Nine enlisted Sailors were interviewed to gain a better understanding of their perspective and enlistment motivations based on their personal experiences. As shown in

Table 5, eight of them joined the Navy as noncitizens and one is from Puerto Rico. The reason for interviewing a Sailor from Puerto Rico was to have the perspective from a citizen born in a U.S. territory, since it appeared to be the third group with lower attrition rates than mainland-born U.S. citizens. The interviewees have been in the Navy between 4 to 18 years and their ranks range from E-4 to E-7. Only the most junior recruit decided not to reenlist as of the time of this interview, but his plan is to continue his bachelor's degree.

2. Summary of major topics addressed in the interview

a. Level of Education

Two of the interviewees have a bachelor's degree. Six out of ten have a high school diploma, and one has an associate's degree.

b. Motivations for Immigration

People have different reasons for immigrating from their country, but for the most part, the incentives include better employment and life opportunities for themselves and their families. This was the case for most of the recruits interviewed. The majority of the interviewees said that it was not their choice to immigrate, but their parents'.

c. Motivation to Join the Navy

Sailors have different reasons to join the Navy but, for the most part in this sample, the majority of them said they were looking for a better future for them and their families. One of them said he was looking for a career and for retirement benefits, and another reported that it was hard for him to find a civilian-sector job in the U.S.

One of the questions asked if they feel that the Navy has impacted their lives in a positive way and eight out of nine said yes. This is important because it demonstrates that the reason for the lower attrition rates is due to the positive impact of the Navy careers in achieving their life goals.

When asked what would they suggest for the Navy to change or to continue doing in an effort to recruit and maintain more immigrants or noncitizens, most of them said that it should be mandatory to get naturalized before finishing boot-camp. But it was interesting to see that three out of nine believe that everyone should be treated equal. Some of them reported that they did not feel like they were treated equally due to their immigration status. They were the same ones reporting that some of the major challenges they faced in the military included a cultural shock and language barrier.

E. SUMMARY

In summary, the interviews with nine active duty Sailors from different geographic areas well represented in the Navy show that the reason to immigrate is to pursue better education and job opportunities. Since all of them appear satisfied with the Navy career fulfilling their life goals, this appears to be the main reason for staying in the service and turning it into a career.

V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A. SUMMARY

This thesis presents a historical background of immigrants in the Armed Forces, empirical evidence of immigrant performance in the U.S. Navy, and individual interviews to identify the reasons why immigrants join and stay in the Navy. In this study, attrition is used as an indicator of recruits' performance, separated into intervals: 0–12 months, 13–24 months, and 25–36 months. Using multivariate models estimated via probit, the analysis reveals that noncitizens have significantly lower attrition rates than citizens. They are followed by naturalized citizens and U.S. citizens born in the territories. All of these groups have lower attrition rates than mainland-born U.S. citizens.

Interviews reveal that immigrants primarily come into the United States to pursue better employment and education opportunities. The Navy appears to help them fulfill these goals, which is why many decide to reenlist and turn the Navy into a lifelong career.

B. CONCLUSIONS

In this paper, we used attrition as an indicator of performance to compare immigrants and noncitizens to U.S. citizens in the Navy. Analyzing the 12-month attrition rate, we found that noncitizens are 6 percentage points less likely to attrite than mainland-born U.S. citizens. Naturalized recruits and those born in the U.S. territories are about 3 percentage points lower than U.S. citizens born in the mainland, who have the highest attrition rate.

When investigating the 13–24-month attrition rate, we found that noncitizens are 2.1 percentage points less likely to attrite than mainland-born U.S. citizens. Naturalized citizens are 0.6 percentage points less likely to attrite in the second year of service than mainland-born U.S. citizens. Finally, U.S. citizens born in the territories are 1.1 percentage points less likely to attrite in the second year of service. For the 25–36 month attrition rate, noncitizens are 0.5 percentage points less likely to attrite than mainland-born citizens. The other two groups appear just as likely to attrite as citizens. To

conclude, attrition rates in the first, second, and third year appear significantly lower for the noncitizen group, followed by naturalized citizens, and then U.S. citizens born in the U.S. territories. The magnitude of these differences declines steadily with time.

In interviews with the small group of noncitizen and immigrant Navy Sailors, we learned that the reason most immigrate is to pursue better education and job opportunities. Since the Navy offers them these opportunities to recruits and their families, these become the primary reasons the Sailors joined this branch over others. Since all of them are satisfied with their naval career fulfilling their life goals, this appears to be the main reason for staying in the service and turning it into a career.

One of the secondary questions is if whether the Navy or the U.S. military will be affected by shifting demographics nationally, and how these trends affect the Navy's interest in recruiting immigrants. The Navy can have a positive impact by increasing the efforts to recruit more noncitizens because of the lower attrition rate among that group. Also, it can be very advantageous for the Navy to increase the recruiting effort in the qualifying pool of noncitizens and immigrants in the United States. Lower attrition rates increase the return on training and recruiting investments.

C. RECOMMENDATIONS

My recommendation is for the Navy Recruiting Command and policy makers to focus their efforts on the recruitment of noncitizens because of that group's dedication to stay and perform well in the service. Also, it would be interesting to study the motivations of U.S. citizens born in the U.S. territories to join the Navy; this can be a good focus group to expand the efforts on recruiting. Another area of further research could include the resiliency of noncitizens compared to citizens and integration in civilian society after retirement.

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